

**DEPARTMENT OF TRANSPORTATION****DIVISION OF ENGINEERING SERVICES**

Office of Structural Materials

Quality Assurance and Source Inspection



Bay Area Branch  
690 Walnut Ave.St. 150  
Vallejo, CA 94592-1133  
(707) 649-5453  
(707) 649-5493

Contract #: 04-0120F4Cty: SF/ALA Rte: 80 PM: 13.2/13.9File #: 70.28**WELDING INSPECTION REPORT****Resident Engineer:**Pursell, Gary**Address:** 333 Burma Road**City:** Oakland, CA 94607**Report No:** WIR-002886**Date Inspected:** 09-Jun-2008**Project Name:** SAS Superstructure**OSM Arrival Time:** 800**Prime Contractor:** American Bridge/Fluor Enterprises, a JV**OSM Departure Time:** 1830**Contractor:** Japan Steel Works**Location:** Muroran, Japan**CWI Name:** Chung-Fu Kuan**CWI Present:** Yes No**Inspected CWI report:** Yes No N/A**Rod Oven in Use:** Yes No N/A**Electrode to specification:** Yes No N/A**Weld Procedures Followed:** Yes No N/A**Qualified Welders:** Yes No N/A**Verified Joint Fit-up:** Yes No N/A**Approved Drawings:** Yes No N/A**Approved WPS:** Yes No N/A**Delayed / Cancelled:** Yes No N/A**Bridge No:** 34-0006**Component:** Tower, Jacking and Deviation Saddles**Summary of Items Observed:**

The following report is based on METS observations at Japan Steel Works (JSW) in Muroran Japan. Current work: Casting, machining and repair of Saddles.

**Fabrication Shop 4**

The QA inspector periodically observed The Nikko Inspection Services QC/NDT technician Mr. Kazuya Kobayashi perform magnetic particle (MT) testing of West Deviation Saddle Base W2E1 locations where multi-layer tack welds had been removed after they were found to be cracked. The MT was performed in accordance with ASTM standard E709, Nikko Inspection Services procedure SF-MT-01 using the yoke method with dry visible powder. The yoke dead lift was verified with a 4.65kg test plate. The magnetic field was verified with a field indicating gauge (pie gauge). All calibrations appear to meet the minimum requirements of ASTM E709. The testing was evaluated in accordance with the contract special provisions. 16 locations that were found to be between various rib plates and the stem plate were found to be acceptable. 1 indication which was found in the stem to base plate tack weld at rib 7 was not removed completely. This indication was not the full length of the weld and was located at the toe of the weld. Initially just the crack area was removed and the area tested by magnetic particle testing and found acceptable. Then a further 50mm of sound weld metal was removed in accordance with AWS D1.5, 2002 paragraph 3.7.2.4. The QA inspector was informed by Intertek Testing Services Quality Control (QC) inspector Mr. Chung-Fu Kuan that the remainder of this tack weld would not be removed. The QA inspector notified Caltrans Structural Materials Representative, Mr. Ron Brasel of this crack repair. Mr. Brasel informed Japan Steel Works Deputy Manager, Mr. Kazunori Sato that a crack repair was required to be submitted to Engineer for approval in accordance with the contract special provisions and AWS D1.

# WELDING INSPECTION REPORT

( Continued Page 2 of 3 )

5, 2002. Mr. Sato then decided that this tack weld would be completely removed by grinding. The testing was not completed on this date and the work appears to meet the minimum requirements of the contract specifications. On this date, Japan Steel Works personnel performed grinding of West Deviation Saddle Base W2E1 multi-layer tack weld ends in preparation for further welding. The tack weld ends were ground to a smooth profile to permit a smooth transition during further welding.

The following digital photograph illustrate observations of the activities being performed.

## Foundry

On this date the QA representative Joe Lanz traveled to JSW foundry, to monitor the in process casting repair welding on West Deviation Saddle casting W2E1. The welding was performed to build up the thickness of the ribs in areas that were found to not meet the minimum thickness of the contract special provisions. The repair locations and repair details for this casting were submitted as number 000643, revision 02. The JSW welding personnel Mr. H. Sato, identified as number 69-2697 continued the in process repair welding of Rib 3L, repair 3-5, location E-1 utilizing the Shielded Metal Arc Welding (SMAW) process per the welding procedure specification (WPS) SJ 3026-2. The welding was performed in the 2G (Horizontal) position. The filler metal utilized was identified as 4.8 mm diameter, Class E10016-G, Brand name LB-106. The minimum preheat temperature of 150° degrees Celsius and maximum interpass temperature of 260 degrees Celsius was verified to meet the WPS requirements by the QA inspector utilizing Tempilstik temperature indicators. The SMAW welding average amperage and voltage by clamp type meter and travel speed were verified to be within the welding procedure specification parameter range of 180 amps to 240 amps, 22 volts to 26 volts and travel speed of 115 to 280 mm per minute by the QA inspector. The repair on rib 3L, number 3-5 length is 560 mm, width is 110 mm and maximum depth is 3 mm with an area of 6,16 square centimeters. The work was not completed on this date and appears to meet the minimum requirements of the welding procedure specification and contract documents.



| Item | Weld Identification | Applicable WPS | CWI Name | Amperage | Voltage | TravelSpeed | Preheat Temp | Remarks |
|------|---------------------|----------------|----------|----------|---------|-------------|--------------|---------|
| 1    | W2E1/7L             | SJ-3026-2      | N/A      | 215 AC   | 23 AC   | 190mm/min   | 180° C       | H. Sato |

## Summary of Conversations:

There were general conversations with Intertek Testing Services Certified Welding Inspectors Mr. Chung-Fu Kuan relative to the location of the welding and inspection personnel in the fabrication shop number 4 and as noted above.

---

## WELDING INSPECTION REPORT

( Continued Page 3 of 3 )

---

### Comments

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Venkatesh Iyer, (858) 967-6363, who represents the Office of Structural Materials for your project.

---

|                      |            |                             |
|----------------------|------------|-----------------------------|
| <b>Inspected By:</b> | Lanz,Joe   | Quality Assurance Inspector |
| <b>Reviewed By:</b>  | Brasel,Ron | QA Reviewer                 |

---